



July 1987

Price \$1.50

LIST MEETING OF JUNE 14, 1987

The meeting was held as scheduled at the home of Harvey Rait in Valley Stream, L.I. and started at 2 PM.

There will be no meetings during the months of July and August, although newsletters will still be published. The next meeting will be on Sept. 13 again at Harvey Rait's home.

The editor was asked to put on the newsletter, near the stamp, the additional wording of "FIRST CLASS- Dated Material- DO NOT DELAY". Hopefully this will improve delivery when mailed out.

It was a pleasant surprise to have Cedric Bastiaans attend the meeting as he had been living in Holland for the past 9 or 10 months. He was able to give us a first hand report of the status of Sinclair in Holland, which was a dim prospectus. Good luck to Cedric in Harrisburg, PA.

It was noted that the English magazine ZX Computing is no longer to be published. June was the last issue.

By the next meeting in Sept., LIST tape #8 for the TS2068/Spectrum will be available, as well as TS1000 tape #3. Also at the next meeting Stoney McMurray will be prevailed upon to demonstrate the ins and outs of programming on the QL.

Joe Newman, our editor, wants to inform you that the USYS TS Bulletin Board is now back on from 7PM to 9AM (Eastern) weekdays, and from 8PM Friday to 9AM Monday. The number is 201-527-0535. 300 Baud only, 8/1/N, and the board will support BOTH QL and 2068 callers. If you wish to reach Joe during 885 hours, try 201-289-5699.

Good news towards our survival is that Computer Shopper, starting in the July 1987 issue, has in addition to Mark Fendrick's column, a second one by Mike O'Brien. If you had to pick one subscription to a magazine I heartily recommend that it be Computer Shopper (in addition to Time Designs- ed.).

Nazir showed us the QL mother boards that are now available for \$30. He will comment in the newsletter on it. Nazir is also trying to arrange another "hardware session" during the summer right in the mad scientist's laboratory. Igor- find him a fresh brain and extra limbs.

Coming up in the fall we will have a meeting devoted to the topic of using modems with our systems. Maybe we can get our Modem Maven, Herb W., to lend his expertise since he has more "ring time" than Sugar Ray Leonard.

Cedric B. also showed us the RMG keytop replacement labels. Good glue- poor print for legends only.

- Harvey R.

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NOTICE LISTing

A FEW WORDS ON A FEW THINGS FROM THE EDITOR

WELCOME to the first issue of L.I.S.T.ing edited by me! I hope I have done a good job! At the present time, I have chosen to be editor of the summer issues of LISTing. However, if all goes well and my work on LISTing is liked I will probably continue to edit future LISTings.

One thing you probably noticed is that I used my new found editorial powers to rename this newsletter LISTing. I decided to try this as many LIST members still seem to call the newsletter LISTing even though previous issues had just said LIST on the masthead. What do you think? Let us all know- send a card with your opinion of whether the newsletter should continue to be called LISTing or whether it should be called just LIST.

Another change I sure hope you've noticed is the layout. I have used a QL and a QL printer to produce this entire issue. QUILL and my Quill Columnizer have been used to produce the inside pages. The exceptions are the front page, set up (appropriately enough) by FRONT PAGE extra. Also, the QL joystick article was not prepared by me- I'm not sure on which machine it was produced. On your card, also let me know what you like better- the inside columns produced by Quill, or the front page style. This newsletter is for your benefit, so come on and let me know how it can better benefit you!

Mentioning benefits- unfortunately John P. had forgotten to include information on how you can obtain BASICODE (as mentioned in his article in this issue). I will have that information for the next issue.

Onto another subject- I have heard from Quantum Computing regarding a statement made in a previous issue. The statement was that 'Frank promised a substantial discount to LIST members but as of this date he has not honored this commitment'. Quantum says that for a LIST member to get a discount from them, an order has to be placed! When doing so, state you are a LIST

member, and request the discount.

Speaking of discounts, Variety Sales, 325 W. Jersey Street, #2D, Elizabeth, NJ 07202, is another reliable source of 2068 and QL hardware and software. Discounts are also offered to LIST members, as are discounts on package deals, multiple purchases (perhaps group purchases?), and free delivery is usually available available to the midtown Manhattan area.

-Joe Newman
Editor etc.

STILL MORE KEYBOARD MANIA!

What follows is my review of the TS2068 keytops that RMG ENTERPRISES of 1419 1/2 7th Street, Oregon City, OR 97045 is marketing (\$3.00 PPD.).

The first disappointment for me was to find that THESE KEYTOPS ARE NOT FOR THE KEYS OF A FULL-TRAVEL KEYBOARD as I have been trying to promote with my keyboard mania series of articles. Instead, they are a replacement for the original TS2068 keytops and thusly lack the legends which are printed on the overlay, such as EDIT and DF FN.

The quality of the merchandise is very impressive. I did not test the adhesive quality, but the liner carries the name FASSON, one of the most prominent adhesive manufacturers in the country; I have always had good very good results with any of their products.

Then the printing is extremely scuff-resistant; it withstood my continued rubbing with an ink-eraser, which as you know contains glass particles mixed in with the rubber!

So from these two plus points, anyone using the RMG keytops should be pleased. The legends themselves, however, are an entirely different matter. They could have been better. First of all, the keytops are quite a bit SMALLER IN SIZE than the computer keytops. They are therefore still not very readable. An exception are the eight graphic characters; these are larger than the originals.

It is apparent that the RMG keytop artwork is the result of an amateur (copyright 1985 by Glen Ten-Eyck and

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Cricket House). One notices that the keywords are not always on the same line level; "print" for instance is on a higher line level than "next". Also, why is one of the CAP SHIFT keytops made wider than the other?

But these are minor drawbacks and are fully compensated by the professional product quality on scuff resistance and expected superior adhesion. I can therefore recommend these keytop labels to anyone who is in need of revamping the original, inadequate Timex keytops, and who wouldn't be?

-Cedric R. Bastiaans

STRANGELY SPEAKS THE SPECTRUM

Still the millstone collar of home computing is the utter uselessness of foreign recorded programs for TS computers. You just cannot load them into your computer! Yes, if you had a printed listing you could handpick through the whole thing and translate it for rekeying, a task pretty debasive for one attuned to modern life.

In Europe this incommunicance among home computers came to a head in 1982. Holland's radio authority, NOS being the Dutch initials, broadcast programs for popular computers beginning in 1979 as part of a show on home electronics. Listeners awaited for the hours scheduled for their instruments and then captured the radio's output onto a cassette tape. The cassette was then played into the computer to load the programs. As new machines came onto the market, NOS added broadcasts to accomodate them.

By 1982, things got out of hand. Radiotime was expensive and each transmission served only a small segment of the audience. NOS thereupon developed a remarkable scheme by which a single transmission may be captured by all listeners, who then on their own translated the recording into their separate BASIC dialects. This system is NOS-BASICODE-2, BASICODE for short. To realize the transformation, listeners bought from NOS a special tape

containing translators for many common machines in Europe.

It occured to computerists that if a BASICODE program could be transformed into a native BASIC one, the reverse should be true. NOS did indeed work out translation programs from native BASICs back into BASICODE and put these on its special cassette. Listeners offered programs for broadcast and it was better to let them translate into BASICODE rather than send in stuff written in umpteen dialects of BASIC. Thus did NOS's BASICODE shows flourish.

Computerists, with the two-way translation programs in hand, quickly found another application for BASICODE: the transfer of foreign BASIC programs into native ones. Which is to say, a foreign computerist would convert his program into BASICODE, put it into tape, and give the tape to the native computerist. The native fellow would then convert the program into his own BASIC via BASICODE.

BASICODE consists of an ordinary audio cassette and an instruction book. The cassette has the translation programs of about twenty different computers. The common ones in the U.S. among them are Apple II, Commodore 64, VIC-20, CoCo, TS-2000, and TRS-80 I and III (some of these are called in BASICODE by their overseas aliases, like "Spectrum" instead of "TS-2000").

The flipside has simple BASICODE programs with which to practice. About half are all-Dutch and the others are multilingual with English as one option. The instructions are in Dutch, which is no problem if your father has a sympathetic brother or you routinely pay your own way on dates. Otherwise, you'll have to confine to the English sections at the back of the book. There is a common introductory section, followed by sections for each machine represented on the cassette. The book is very plainly and carefully written, yet you really do have to read it and pay attention to it, lest your translated programs end up as ASCII salad.

As noted before, in Europe

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computerists enjoy BASICODE to exchange programs of various dialects among themselves. In the U.S. we cannot do this because very few computerists have the BASICODE tape or have even heard of it. In fact, BASICODE seems to have recognition only in the New York City area, possibly because its residents are more sensitive to their Dutch heritage.

With no one around to swap programs with, what can you, as a TS adherent, do with BASICODE? On the Spectrum BASICODE installs two incredible features. The lesser one is that the Spectrum screen is resized to a 42 column display with high-legibility type. This display is remarkably easy on the sight, even to short-eyed folk, and it can be toggled back to the 32 column mode at will. The 32/42 column switch works independantly on the TS printer as well!!

Furthermore, you can lift out of BASICODE the code for this 32/42 switch and meld it into your own programs. The immediate example is with the 40 column minimum many telecom services impose.

Here's the freaky thing. Only the UPPER screen is in 42 columns. When you bring a line down to edit it, the LOWER screen remains in 32 column mode! Put the line back, list it, and poof! you're back in 42 columns!!

That is the lesser incredible feature. Before going any further, do change into some old pants, pants you can throw away instead of trying to launder. Please, go.

Ready? The greater unbelievable feature is that you can type directly into the Spectrum a program in BASICODE. What good is this? BASICODE, to cool you to the drift, is a core of MS-BASIC, quite close to the dialects of Apple II and TRS-80. Here we must be even mannered about life and all due respect to MS-BASIC for what it is: a tank of turds. Never-the-less, most other computers build their systems upon it.

BASICODE actually "extends" for us Spectrumites the TS-BASIC to accept many features of MS-BASIC. You can actually type into the machine MS code

intermixed with TS code! Which is to say, you can take a listing for Apple, TRS-80, or other MS computer, and key its code directly into the Spectrum with virtually no preliminary translation!! And the program then resident in your Spectrum will edit, save, and run just like an all native TS program!! Because many TS and MS operations accomplish the same thing, you frequently have a choice of feature to key in as you read the listing!!!

The prospect before us on our Spectrum mundulus is absolutely awesome. You can now exploit all those foreign magazines and books which you heretofore had to pass up-- watch.

Figure 1 is a listing from Compute, December 1985. It's for a Memo-Diary program written in MS-BASIC. Although alterations are presented for the Apple, C-64, etc., none are offered for the TS. Ordinarily you would have to manually massage the code into TS form before typing it in. But now you sit down and type in right from the book with BASICODE active on the Spectrum!

Figure 2 is this Memo-Diary as keyed into the Spectrum. No chocolate mess! There's little translation involved; it's almost very and true figure 1 itself! The only major alteration is the line numbers. BASICODE reserves lines 1-999 for its internal routines and your program must begin at least at 1000. So as you type you mentally add 1000 to the line numbers and GOTO/GOSUB destinations.

You notice something odd as you type. The TS keystroke and edit mechanism is fully in force, but the line parser is not. You could, in fact, key in rubbish and the Spectrum will accept the line! (Hey, you ARE typing in Microsoft BASIC, aren't you?)

Since you will ultimately run the keyed in program directly and not put it through the translator, you really don't need most of the code below line 1000. You just put in the TS functions themselves instead of calling the BASICODE routines. However, until you get used to the

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BASICODE, leave its code alone; it certainly doesn't hurt. In the same vein, many of the calculations for writing programs intended for later conversion into BASICODE, as stipulated in the instructions, may be set aside.

Now don't forget that you always enjoy the TS special functions, especially the color-graphics-sound, for program embellishment!

After the program is typed in, do a safety save and run it. Chances are you'll trip with either a "variable not found" or "nonsense in BASIC" error. Real Microsoft BASIC initializes all variables to null or zero and dimensions undeclared arrays to 11 elements. The TS implementation does not. As a first fixup add headend lines to initialize variables and arrays. For a "nonsense" report examine the syntax. There may be a conflict between a TS and a MS operation. By-the-way, during the run you'll get the usual TS error messages- but they'll be triggered by MS faults!!

Chill out, man, does this whole thing really work? Or is it so much stoopstomping? Figure 3 is a freeze frame of the Memo-Diary in action as it runs off of figure 2. Right on your Spectrum.

Feel why you needed those old pants?

LETTERS

Dear List:

Now that I have my QL hooked up to my Sears RGB monitor I need to change the screen display width. The cursor is about 4 columns off of the screen in monitor mode.

My problem is two fold. Florida TV experts CHARGE and CHARGE. I could probably do it myself if I knew what to look for and do to the monitor. I do not wish to go into this blind so, someone, help please! What do I look for and do??

Thanks,

Marinus W. Heusevelt
Lantana, Florida

* Mr. Heusevelt and others with screen

adjustment problems- on the Sears RGB there is an H-CENTER control in the side door. You must use the tool mounted inside the door to adjust this. Other monitors have this control on their back panel...usually a tool is required to reach it- the tool being a long, thin plastic screwdriver like device. These are available in sets from stores like Radio Shack. But be careful- the control can easily be bent on its circuit board. Remember- all projects you undertook (even if mentioned here in LISTing) you do at YOUR OWN RISK.

Dear LIST:

Do you have a fix for the QL microdrive that won't read or write, yet lights the LED and runs until it stops with an error code? Is the Doug Dewey capstan fix with Magic glue a fix for the new read/write condition on a new drive?

Now about N. Pashtoon's note on the RTTY program. Well, this is a common complaint about all no-interference CW and RTTY programs using a computer program to decode incoming signals. It is not the fault of the program, but due to the selectivity of the receiver being too broad to get a quiet channel. A good ham receiver with a filter set to 100 to 500 cycles will have no problem. The average receiver, even ham grade, without extra filters, has a bandwidth of 2 to 3 KC generally set for SSB and hoping to be okay for code or RTTY. The shortwave receiver that the average person might hook up to a computer will probably have a selectivity of 6 KC or so and be quite noisy. The easiest cure is to buy or build an audio filter since the computer program is fed from the audio output of the receiver. A typical filter box is the Heathkit ACTIVE AUDIO FILTER HD-1418. Some of the computer interfaces for ham CW and RTTY programs also filter the audio so as to have a quiet channel. On a CW program strings of E's and T's are a sure sign of a noise problem. Often reducing the RF gain and turning up the volume to max (i.e. setting loudness with the RF gain) will work

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Letters

in lieu of filtering or with a wide filter.

The reason Packet is only on the vhf bands is because of the noise in the bands. AMTOR is supposed to be usable in the HF band but filtering and good signals are still necessary. Packet is ideal for a satellite and a mailbox operation. This has the least noise of all.

Sincerely,
Bob Howard, WA6DLI
West Covina, CA

* Bob and to others who seem to have a runaway microdrive- the capstan is often the source of the problem. You can take a light and shine it into the faulty drive's slot. You will be able to see the rubber capstan on the left. If the capstan is pushed up against the top of the QL case, it is most likely causing the problems. It may be possible to reach a small thin implement into the slot and push the capstan back down. This may not solve the problem, and if it does, there is no guarantee the capstan won't rise up again. Opening the QL case and carefully adding a drop of glue to the capstan shaft should hold it in place. Just BE CAREFUL! If pushing the capstan down does not solve the problem, contact A+ Computer Response or the dealer who sold you your QL. If you determine replacing the drive is necessary and you wish to do it yourself on an out of warranty QL, your dealer should be able to supply you with a microdrive unit. The cost should be between \$40 and \$60.

Thanks for your comments on Nazir's comments.

"Keep up the good work"

-Stan Nagrod, Mamaroneck, NY

"Congratulations on the new format for LIST. It makes the newsletter so readable that this 'old guy' can finally read it!"

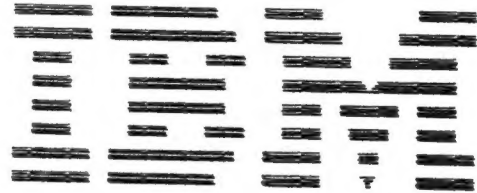
-Rae Clough, Levittown, NY

"The new LIST is a pleasure to read at last!" -Bob Howard, West Covina, CA

"I have been very pleased with the magazine...good quality"

-K.A. Ball, Cambridge, MA

"Print quality on LIST continues to be very good!" -Joan Kealy, El Paso, TX



SCREEN DUMP

TRY THIS

```
1 REM *
  IF YOU'RE TIRED OF EXPLAINING
  TO YOUR FRIENDS WHAT A TIMEX IS
  OR YOU WANT TO IMPRESS (LIE) TO
  THEM THEN USE THIS AS A "START"
  DISK PROGRAM OR PRE-LOAD THIS...
  VERY IMPRESSIVE!
G. GILDER 12-12-86
```

```
2 REM
3 REM
4 REM
```

```
40 PAPER 1: BORDER 1: PRINT
```

```
50 GO SUB 100
```

```
60 CLS : PRINT INK 7;AT 10,0;"
```



```
90 STOP
```

```
100 FOR f=0 TO 30: READ X: POKE
USR "a"+f,X: NEXT f
```

```
150 DATA 126,60,24,24,0,0,0,0,1
29,195,231,255,0,0,0,0,128,192,2
24,240,0,0,0,0,1,3,7,15,0,0,0,0
```

```
160 RETURN
```

```
900 STOP
```

```
9900 CLEAR : SAVE "ibm" LINE 1
9999 REM * THESE ARE UDG'S
A-D USED TO HELP FORM BIG-BLUE
LOGO
```



LONG ISLAND
SINCLAIR TIMEX GROUP

TIPS

PROTECTING YOUR PROGRAMS AGAINST LILCO

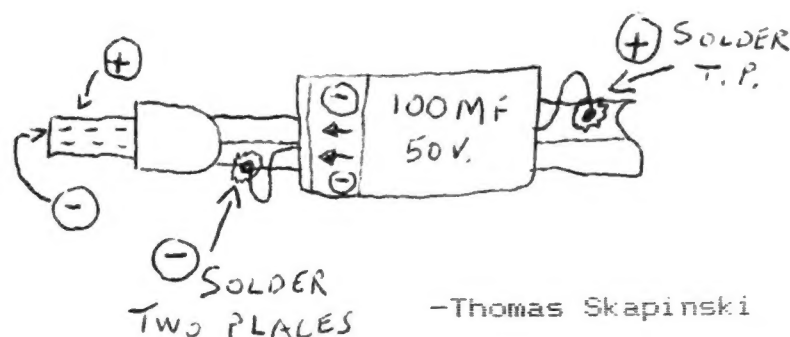
If you live on Long Island, as many of our club members do, then you probably find yourself in the same boat as me.

Our electricity supplied by LILCO is so erratic, I hate to work on programs, because if it is raining, or if it is windy, or if it is sunny, or if it is dark out, or if it is Summer, Winter, Spring, or Fall, the electric can, and often does, blink momentarily causing the computer to crash.

The other day it was raining a little and, of course, the electricity blinked off and on three times in two hours. I got so disgusted, I gaved up on the program I was working to debug. But I didn't give up on computing. I decided to add a big capacitor (1000 mfd 50 v) across the power supply leads hoping this little extra charge could power the computer for a few seconds, if necessary. So far I have only tested this modification by flipping the power (AC) switch on and off rapidly and it did power the computer for this short duration.

Thankfully LILCO has kept the power coming steadily during the time I have been using the computer- for about three days (at time of writing). But I know this is only a false indication that we have reliable power. So the next time LILCO blinks on me, I hope my modification will keep me computing.

The details for this modification, if you choose to try it, are as follows. Add the capacitor, observing the correct polarity, by soldering each capacitor lead to its respective wire. This may be accomplished by stripping a small amount of insulation from each wire about 2.5 inches apart and soldering the leads to each wire.



-Thomas Skapinski

NOTICE

CONTRIBUTING TO LISTing

We are always looking for interesting articles, programs, reviews, etc. to keep our membership informed and entertained. Articles submitted for publication are accepted on the following basis:

- 1) YOU the writer maintain the full copyright and can resell, lend, or give away your work as you wish.
- 2) WE are granted the right to publish your material, in the original issue in which it appears. Reprints (e.g.- to supply orders for back issues) will include your material as part of its original issue. We are not allowed to sell your material in any other way, without your express written consent.

We can't (for now) pay you for your material, but you will receive a copy of the issue in which it is published, even if you are not a member. You may get more than one issue and you will definately earn the respect and appreciation by your grateful pears.

TO SUBMIT MATERIAL- It is prefered that items are submitted as a QUILL or EDITOR text file (for the QL), with no control codes inserted in the text- i.e.- no change of timesteps or underlining, etc. This way the editor of LISTing will be able to process the text using a QL Quill Columnizer. QL submissions may be on microdrive cartridge (returnable) or 5.25" dsdd disk. Other submissions are preferred typed, double spaced. 2068 and TS1000 word processor files will be allowed shortly (when they can be uploaded into the editor's QL)...a notice will be placed into LISTing when this becomes possible. If you include diagrams, photos, etc. please keep them sharp and preferably in black and white as these will reproduce the best.

Submissions may be sent to:

L.I.S.T.

PO Box 438

Centerport, NY 11721-0438

+ OR +

Joe Newman, Editor of LISTing

325 W. Jersey St., #2D

Elizabeth, NJ 07202

Include SASE if you wish for items to be returned.

LISTing

```

1560 G
1570 IF P>
1580 END
1590 PRINT "READ:
      EVENTS FILE (Y,
1600 INPUT P$
1610 IF LEFT$(P$,1)="-Y" THEN
      630
1620 STOP
1630 D9$=D9$+"/"
1640 D9$=D9$+RIGHT$(STR$(Y8+10
      0),2)
1650 C=2
1660 GOTO 3010
1670 M=0
1680 PRINT "MONTH";
1690 INPUT MM$
1700 M=VAL(MM$)
1710 MM$=LEFT$(MM$+"XX",3)
1720 IF M=0 THEN 1760
1730 IF M<1 OR M>12 THEN 1670
1740 PRINT M$(M)
1750 GOTO 1810
1760 FOR J=1 TO 12
1770 IF MM$<>M$(J) THEN 1790
1780 M=J
1790 NEXT J
1800 IF M<1 OR M>12 THEN 1670
1810 PRINT "DAY";
1820 INPUT D
1830 IF D<1 OR D>31 THEN 1670
1840 D8$=RIGHT$(STR$(100+M),2)
      +"/"
1850 D8$=D8$+RIGHT$(STR$(100+D
      ),2)
1860 Y=Y8
1865 IF D8$=D9$ AND FL=1 THEN 1880
1870 IF D8$>=LEFT$(D9$,5) THEN
      1890
1880 Y=Y8+1
1890 GOSUB 2150
1900 IF LEN(LL$)<=0 THEN 1920
1910 PRINT "(:WS(W);)"
1920 RETURN
      C=1
      GOSUB 3010
      RN

```

FIGURE 255

1

2000

ANNUAL OR ONE-TIME (A/O) 0
 MONTH 5
 MAY
 DAY 14
 (THURSDAY)
 DETAIL RECENT ADVANCES SEMINAR
 23 FUTURE EVENTS

1. SEE FUTURE EVENTS
2. ADD NEW EVENT
3. CANCEL EVENT
4. SEARCH FOR EVENT
5. QUIT

...YOUR CHOICE (1-5) 1

AHEAD TO DATE:
 MONTH 6
 JUN

```

2560
2570 PRINT
2580 IF (Y/N) "Y"
2590 INPUT P$
2600 IF FN L$(P$,1)=-
2610 STOP
2620 LET D9$=D9$+"/"
2630 LET D9$=D9$+FN R$(STR$(Y8+10
2640 LET C=2
2650 GO TO 4010
2660 LET M=0
2670 PRINT "MONTH ";
2680 INPUT MM$
2690 IF MM$>"9" THEN GO TO 2710
2700 LET M=VAL(MM$); GO TO 2720
2710 LET MM$=FN L$(MM$+"XX",3); GO TO 276
0
2720 IF M=0 THEN GO TO 2760
2730 IF M<1 OR M>12 THEN GO TO 2670
2740 PRINT M$(M)
2750 GO TO 2810
2760 FOR J=1 TO 12
2770 IF MM$<>M$(J) THEN GO TO 2790
2780 LET M=J
2790 NEXT J
2800 IF M<1 OR M>12 THEN GO TO 2670
2810 PRINT "DAY ";
2820 INPUT D
2830 IF D<1 OR D>31 THEN GO TO 2670
2840 LET D8$=FN R$(STR$(100+M),2)+"/"
2850 LET D8$=D8$+FN R$(STR$(100+D),2)
2860 LET Y=Y8
2865 IF D8$=D9$ AND FL=1 THEN GO TO 2880
2870 IF D8$>=FN L$(D9$,5) THEN GO TO 2890
2880 LET Y=Y8+1
2890 GO SUB 3150
2900 IF LEN(LL$)<=0 THEN GO TO 2920
2910 PRINT "(:WS(W);)"
2920 RN

```

FIGURE
2

255

```

/88 CARL SCHURZ STARPARTY
/88 TS-FEST START
TUESDAY MAY 5
/88 CALL ENGINEERING SCHOOLS
/88 SEE WENDY
WEDNESDAY MAY 6
/88 AAA LECTURE
THURSDAY MAY 7
/88 FIX 123 FOR UN OFFICE
FRIDAY MAY 8
/88 MEET WITH GAO
SATURDAY MAY 9
/88 NATIONAL ASTRONOMY DAY
SUNDAY MAY 10
/88 SEE MYRNA
MONDAY MAY 11
/88 LIST (NY) MEETING
TUESDAY MAY 12
/88 BORROW FBI FLOORPLANS
THURSDAY MAY 14
/88 PICK UP STARATLASES
/88 RECENT ADVANCES SEMINAR
FRIDAY MAY 15
/88 FIX COPROC IN BIG IBM-XT
SATURDAY MAY 16
/88 PREPARE TALK ON TS-FEST
/88 DEADLINE FOR JUNE EYEPIECE
/88 FINISH LIST ARTICLE
SUNDAY MAY 17
/88 LIST (LI) MEETING
MONDAY MAY 18
/88 FRENCH CONSULATE LUNCH
TUESDAY MAY 19
/88 SEE PHYLLIS
WEDNESDAY MAY 20
/88 AAA ANNIS BUSINESS MEETING

```

FIGURE 3

The UK QL joystick ports are, as is usual with Sinclair machines, non-standard. Fortunately, for those of us with USA QL's Sinclair has provided "standard" Atari style sockets on our version. The Atari nine pin D-style pinout is the accepted universal arrangement for switch type joysticks, for all but a few computers and video games.

There are two nine pin ports on the QL. Addressing these is treated briefly in the manual which accompanies the machine (page 27 in the "Concepts" section), with the following explanation,

Mode	Key CTL1	Key CTL2
up	↑	F4
down	↓	F2
left	←	F1
right	→	F3
fire	'space'	F5

The KEYROW command, on page 30 of the Keywords section, explains how to look at the keyboards rows and columns, in order to determine which key, or keys, you have just pressed down. The keyboard connectors J11 and J12, have 9 and 11 pins respectively, and are composed of the same "tin stripes on plastic" with which Sinclair users have struggled for many years. The official nomenclature for the Joyports refers to them as J3 and J4, and they are connected in parallel with some of the pins on J11 and J12. A partial schematic is provided in Figure 1, below. The section shown on the left of the figure is the original QL schematic and uses the UK pinout for the J3,4 connectors. The sketch on the right is a blowup of one of the switch contacts.

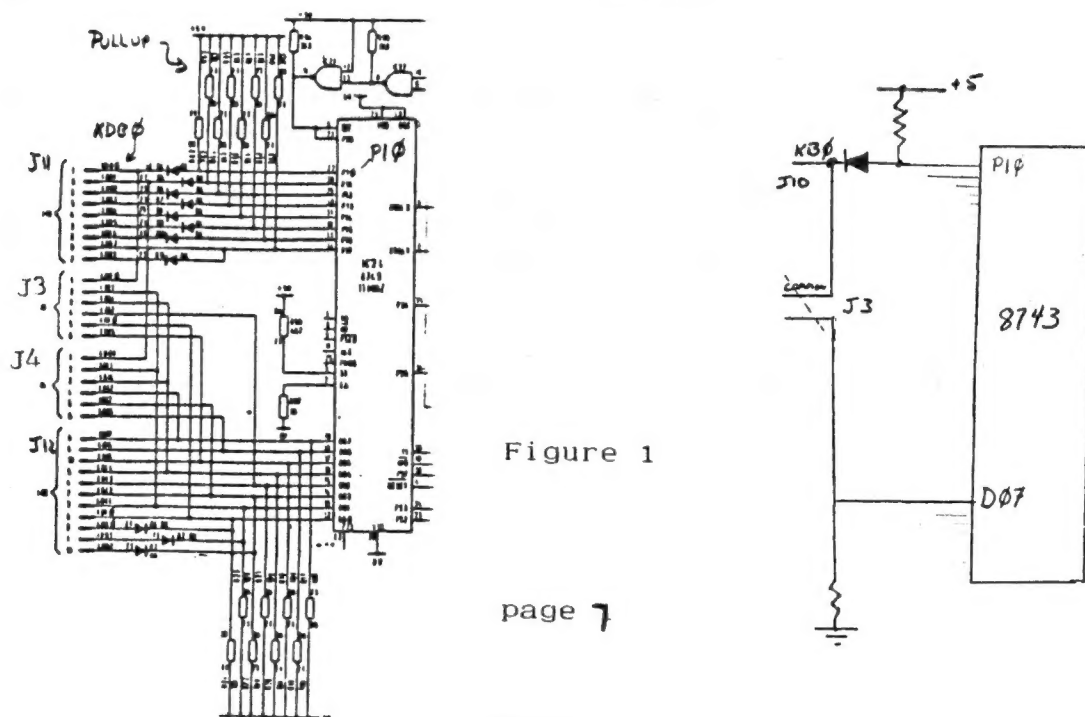
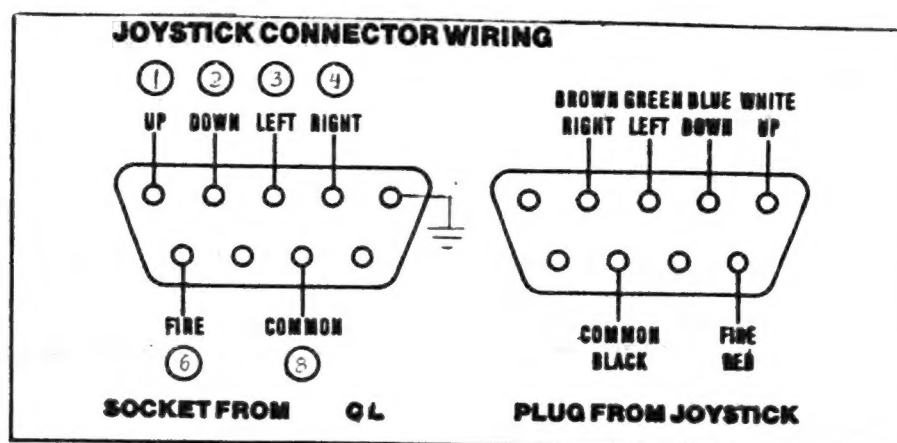


Figure 1



While the QL's two ports are "standard" Atari for simple switch type joysticks, they are far from complete implementations of the type of port found on an Atari 2600 Video Computer System(VCS), or "Atari Game" as it has become know. The VCS uses all 9 pins to provide dual analog ports as well as the simple 4-way-and-fire found on the QL. In this article, we will delineate the pinout found on the QL and describe the basic functioning of the port, through examples.



The 'standard' colour codes for the joystick plug and socket; if the colours differ for your particular 'stick, you'll have to dismantle it.

Fig. 2

The basic pinout is as shown in Figure 2. The numbering system shown on the figure is based on an aftermarket socket which I had on hand, and may not correspond with the systems used on some "Atari" joysticks. Note that 'common' refers to either KBD0 or KBD1(the KEYROW contacts 0 & 1), while ground is system ground, and is connected to the case shielding. Referring back to Fig. 1, the KB lines are normally held high and have isolation diodes, as well. The 8 data lines(in this case only D7 is shown), have pull down resistors.

The chart below expands on the simple one provided in the manual, by combining data found in several sections of the book, and our observations, in one place.

Mode	Key CTL1	Value		DATA	Key CTL2	Value		DATA	Pin No.
		Dec	Hex			Dec	Hex		
up	↑	4	4	D2	F4	1	1	D0	1
down	↓	128	80	D7	F2	8	8	D3	2
left	←	2	2	D1	F1	2	2	D1	3
right	→	16	10	D4	F3	16	10	D4	4
fire "space"		64	40	D6	F5	32	20	D5	6
	\	32	20	D5	5	4	4	D2	-
	"ENTER"	1	1	D0	4	64	40	D6	-
	"ESC"	8	8	D3	7	128	80	D7	-
Common KBD1		-	-	-	KBD0	-	-	-	8
Ground		n/a							5

For some reason, the left and right functions give the same values for both strobes, while the other directions do not seem to have any fixed relationship. Note too, that there are three additional values which can be returned from the keyboard, and not from the joystick ports. Finally, we should point out that, because each "direction", or value, represents a different data bit(D0 through D7), it is possible to monitor for multiple occurrences, all at the same time. That is, we can poll the joyports and simultaneously read that the stick is being pushed up and to the right, while the "fire" button is being hit. Specifically, for CTL1 a value of 84(decimal), or 54 hexadecimal indicates that condition.

Let's look at the byte returned by control port #1(CTL1). There are 8 bits of data placed on the port bus. They are arranged as follows

Action	BYTE	D7	D6	D5	D4	D3	D2	D1	D0
NONE	0	0	0	0	0	0	0	0	0
ENTER	1	0	0	0	0	0	0	0	1
← LEFT	2	0	0	0	0	0	0	1	0
↑ UP	4	0	0	0	0	0	1	0	0
'ESC'	8	0	0	0	0	1	0	0	0
→ RIGHT	16	0	0	0	1	0	0	0	0
'\'	32	0	0	1	0	0	0	0	0
FIRE ' '	64	0	1	0	0	0	0	0	0
↓ DOWN	128	1	0	0	0	0	0	0	0

So, the combination of 'up', 'right' and 'fire'; which could easily be required in a typical video game, shows up on the co-processor bus as:

ACTION	HEX	DEC	D0	D1	D2	D3	D4	D5	D6	D7
U,R,F	84	54	0	1	0	1	0	1	0	0

While it is possible to write a joyport polling routine which looks for discrete values for each possible combination of switch closures, it soon becomes clear that the number of program steps required to do so will make the final user program both cumbersome and frightfully slow. As you can see by the stick-sketch below(Fig.3), there are no less than 18 possible legal combinations for joystick moves. Covering them all would require at least the same number of procedures, or subroutines. This is the way a number of TS1000 and 2068 public domain games were written, and one of the primary reasons why they had either such limited response(since only the "pure" 5 switches were monitored), or were too slow(too many conditional tests required).

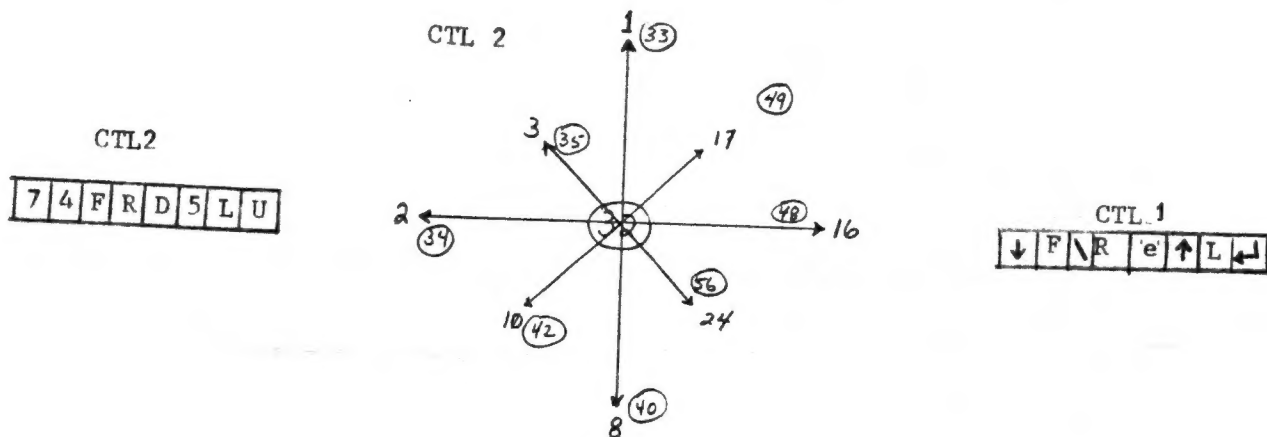


Figure 3

The QL, however has some very powerful "logical operators" which are built-in, and which can help provide a much more elegant solution to the problem of multiple switch closures(see page 35 in the Concepts section of your QL manual). Since we want to monitor the bits contained in the byte returned by KEYROW, we should look for an operator which performs some 'bitwise' function. The "&&" operator, or "bitwise and", is a good candidate for a simple SuperBASIC procedure to call our specific routines. In fact, we can execute all legal moves with but 5(and not 18) procedures.

The program listing(No. 1) attached to this tutorial illustrates the use of the bitwise and operator. While the program itself doesn't do much, the procedures can be easily adapted to your own programs. For comparison, listing 2, is an excerpt of a joystick test program, written using discrete values for the various possible responses. It should be fairly evident that fewer procedures are required with Listing No.1.

Listing # 1

```

10 REMARK set up for EP44
25 BAUD 1200
30 OPEN#7, Ser1hc
40 LIST #7
100 REPEAT joy2
110 J2=KEYROW(0)
120 JS2
130 DEFINE PROCEDURE js2
140 IF J2&&1 THEN up
150 IF J2&&2 THEN left
160 IF J2 && 8 THEN down
170 IF J2&&16 THEN right
180 IF J2&&32 THEN fire
190 END DEFINE js2
200 DEFINE PROCEDURE up
210 PRINT "up"!
220 END DEFINE up
230 DEFINE PROCEDURE down
240 PRINT "down"!
250 END DEFINE down
260 DEFINE PROCEDURE left
270 PRINT "left"!
280 END DEFINE left
290 DEFINE PROCEDURE right
300 PRINT "right"!
310 END DEFINE right
320 DEFINE PROCEDURE fire
330 PRINT "fire"!
340 END DEFINE fire

```

QL Joystick Tests

Note: In Listing # 2 both methods of scanning are used.

Listing # 2

```

10 OPEN #4, CON_120X100A0X0_32
100 CLS:CLS #4:AXES
110 SETUP
112 DEFINE PROCEDURE AXES
115 LINE 50,0 TO 50,5: LINE 0,50 TO 5,50
116 LINE 95,50 TO 100,50: LINE 50,95 TO 50,100
118 END DEFINE AXES
130 PENDOWN: F=1: L=0
140 M=3: ANGL=0:X=50:Y=50
150 choose
170 DEFINE PROCEDURE ul
180 ANGL=135: ALPHA
190 END DEFINE ul
200 DEFINE PROCEDURE ur
210 ANGL=45:ALPHA
220 END DEFINE ur
230 DEFINE PROCEDURE dr
240 ANGL=315:ALPHA
250 END DEFINE dr
260 DEFINE PROCEDURE dl
270 ANGL=225:ALPHA
280 END DEFINE dl
290 DEFINE PROCEDURE fire
300 AT#4, 4,6: PRINT#4, "FIRE!"
310 PAUSE 20: AT#4, 4,6: PRINT#4, " "
320 LET F=NOT(F)
330 BRUSH
340 END DEFINE fire
350 DEFINE PROCEDURE up
360 AT#4, 2,7: PRINT#4, "UP"
370 PAUSE 20: AT#4, 2,7: PRINT#4, " "
380 ANGL=90: ALPHA
390 END DEFINE up
400 DEFINE PROCEDURE down
410 AT#4, 6,6: PRINT#4, "DOWN"
420 PAUSE 20: AT#4, 6,6: PRINT#4, " "
430 ANGL=270 : ALPHA
440 END DEFINE down
450 DEFINE PROCEDURE left
460 AT#4, 4,1: PRINT#4, "Left"
470 ANGL=180 : ALPHA
480 PAUSE 20: AT#4, 4,1: PRINT#4, " "
490 END DEFINE left
500 DEFINE PROCEDURE right
510 AT#4, 4,10: PRINT#4, "Right"
520 ANGL=0 : ALPHA
530 PAUSE 20: AT#4, 4,10: PRINT#4, " "
540 END DEFINE right
550 DEFINE PROCEDURE joy2
560 IF INKEY$="Q" THEN choose
570 LET J2= KEYROW(0)
580 REMARK
590 IF J2&&1 THEN up
600 IF J2&&2 THEN left
610 IF J2&&8 THEN down
620 IF J2&&16 THEN right
630 IF J2&&32 THEN fire
640 GO TO 680
640 ON J2-3 : ul
650 ON J2-10 : dl
660 ON J2-17 : ur
670 ON J2-24 : dr
680 IF J2=64: PRINT#4, "FOUR(4)"
690 L = NOT(L): ARROWS
700 IF J2=4 : PRINT#4, "FIVE (5)"
710 IF J2=128 : PRINT#4, "SEVEN(7)"
720 END SELECT
730 END DEFINE joy2
740 DEFINE PROCEDURE choose
750 CLS : CLS #4: AXES
760 PRINT#4, "Choose either port(1 or2)":
770 INPUT#4, c
780 CLS : CLS #4: AXES
785 POINT 50,50
790 SELECT ON c
800 ON c=1 : js1
810 ON c=2: js2
820 ON c=REMAINDER : choose
830 END SELECT
840 END DEFINE choose
850 DEFINE PROCEDURE js1
860 REPEAT jss1
870 joy1
880 END REPEAT jss1
890 END DEFINE js1
900 DEFINE PROCEDURE js2
910 REPEAT jss2
920 joy2
930 END REPEAT jss2
940 END DEFINE js2
950 DEFINE PROCEDURE joy1
960 IF INKEY$="Q" THEN choose
970 j1=KEYROW(1)
980 SELECT ON j1
990 ON j1=1 :AT#4,8,0: PRINT#4, "enter"
1000 AT#4,8,0: PRINT#4, " "
1010 LET L=NOT(L)
1020 ARROWS
1030 ON j1=2 : left
1040 ON j1=4 : up
1050 ON j1=6 : ul
1060 ON j1=7 : REMARK
1070 ON j1=8 : PRINT#4, "ESC"
1080 ON j1=16 : right
1090 ON j1=20 : ur
1100 ON j1=32 : PRINT#4, "\"
1110 ON j1=64 : fire
1120 ON j1=128 : down
1130 ON j1=130 : dl
1140 ON j1=144: dr
1150 END SELECT
1160 END DEFINE joy1
1170 DEFINE PROCEDURE SETUP
1180 PRINT "BIG OR LITTLE":INPUT B$
1185 IF B$="B" THEN BIG
1190 IF B$="L" THEN LIL
1200 IF B$="B" AND B$="L" THEN SETUP
1210 END DEFINE SETUP
1220 DEFINE PROCEDURE ALPHA
1230 IF L=1 THEN BLINK
1240 IF F=0 AND L=0 THEN CZ
1250 TURNT0 ANGL
1260 MOVE M
1270 Y=Y+M*SIN(RAD(ANGL))
1280 X=X+M*COS(RAD(ANGL))
1290 AT#4,1,0:PRINT#4, X;" ";Y
1300 END DEFINE ALPHA
1310 DEFINE PROCEDURE BRUSH
1320 SELECT ON F
1330 ON F=0
1340 AT#4,7,0: PRINT #4, "PENUP "
1350 PENUP
1360 REMARK
1370 ON F=1
1380 AT#4,7,0: PRINT #4, "PENDOWN "
1390 PENDOWN
1400 END SELECT
1410 END DEFINE BRUSH
1420 DEFINE PROCEDURE ARROWS
1430 SELECT ON L
1440 ON L=0
1450 AT#4,7,8:PRINT#4,"\"
1460 ON L=1
1470 AT#4,7,8:PRINT#4,"\"
1480 END SELECT
1490 END DEFINE ARROWS
1500 DEFINE PROCEDURE BLINK
1510 FOR I = 1 TO 4
1520 INK 7: POINT X,Y
1530 INK 2: POINT X,Y
1540 NEXT I
1550 INK 7
1560 END DEFINE BLINK
1570 DEFINE PROCEDURE CZ
1580 FILL 1
1590 CIRCLE X,Y,1.5
1600 INK 2
1610 CIRCLE X,Y,1.5
1620 INK 7
1630 FILL 0
1640 END DEFINE CZ
1700 DEFINE PROCEDURE BIG
1705 CLOSE #4
1710 OPEN #4, CON_240X256A0X0_32
1720 PAPER #4,0:INK#4,6:CSIZE#4,3,1
1730 WINDOW 100,100,256,0
1740 END DEFINE BIG
1750 DEFINE PROCEDURE LIL
1760 CLOSE #4
1770 OPEN #4, CON_120X100A0X0_32
1780 PAPER#4,0:INK#4,6:CSIZE #4,1,0
1790 WINDOW 512,256,0,0
1800 CLS #4
1810 END DEFINE LIL

```

Dead Code

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